ATTACHMENT A

Remarks

By this Amendment, various dependent claims with allowable subject matter have been rewritten as new independent or dependent claims to make all of them allowable. Independent claim 31 has also been amended to further define the invention. It will further be noted that use of means plus function limitations of the claims have also been changed in the previous as well as the new claims to recite the device itself. It is submitted that the present application is in condition for allowance for the following reasons.

Initially it is noted that in the (next to last) *Allowable Subject Matter* section the examiner indicated that the subject matters of dependent claims 4-5, 7-9, 13-15, 19-20, 22-24, 28-30, 32, 34 and 36-38 were allowable. This indication of allowable subject matter is appreciated, and it will be appreciated that the subject matters of these claims have now been rewritten, respectively, as new independent or dependent claims 45-65. Thus, all of claims 45-65 are now allowable. It will also be appreciated that previous dependent claims 4-5, 7-9, 13-15, 19-20, 22-24, and 28-30 have now been canceled; while previous dependent claims 32, 34 and 36-38 have been retained as depending from currently amended independent claim 31.

It will also be noted that new claims 66-67 have also been added. These claims are similar to previous claims 39-40, but with dependencies from new claims 61 and 64 respectively. Obviously, new claims 66-67 are allowable for the same reasons as claims 61 and 64 from which they depend.

As noted above, independent claim 31 has been amended to better define the invention. In particular, independent claim 31 has been amended to add a reference to "an elliptical scan pattern with varying eccentricity". This brings independent claim 31 more closely into line with the similar limitations of independent claims 1 and 16.

In the *Claim Rejections - 35 USC § 102* section, independent claims 1 and 16 together with dependent claims 10-11 and 26, 39 and 42 were rejected under 35 USC § 102 as being anticipated by the Seibel et al. However, for the following reasons, it is submitted that these claims are allowable over this reference.

Regarding claims 1, 10 and 16, the Examiner contends that Seibel et al. disclose at column 17 lines 5 to 10 drive means operable to move the tip of a light transmission means in an elliptical pattern while varying the eccentricity of the elliptical pattern. However, the cited passage of Seibel et al. merely discloses "an elliptical pattern with varying radii". This passage is somewhat unclear, as ellipses do not have "radii". However, from column 12 line 34 of Seibel et al. it is explained that in some embodiments "a spiral scanning pattern is implemented by the drive system 28, in which the radius of the spiral varies to trace an area of an object." This passage describes a circular scan pattern in which the radius is varied in order to scan and hence 'fill' the interior of the circle. Column 17, lines 5 to 10 are therefore suggesting a similar scan, but of overall elliptical rather than circular shape, in which the size of the ellipse is varied in order to fill the interior of the ellipse and hence scan the entire ellipse. Varying the (plural) "radii" is thus clearly intended to mean varying the "major axis and minor axis" of the ellipse.

The present invention employs an entirely different approach than that of Seibel et al. Instead of varying the size of the elliptical scan pattern, the present invention varies the eccentricity of the scan pattern. Hence, claim 1 includes the step of "varying the eccentricity of said elliptical pattern", and claim 16 includes "first and second drives... operable to move said tip in an elliptical pattern while varying the eccentricity of said elliptical pattern." Claim 31, as noted above, has been amended to define that "said apparatus is operable to scan said exit tip in an elliptical scan pattern with varying eccentricity." Seibel et al. make no reference whatsoever in their entire specification to "eccentricity", let alone to varying eccentricity, either directly or by implication.

The present invention can thereby produce the scan pattern illustrated in, for example, figures 1A to 1C, in which an initial elliptical trace is followed by subsequent elliptical traces of increasingly higher eccentricity until a line trace is produced, after which the eccentricity is again progressively reduced until the initial trace is reproduced (cf. claim 4 as filed, now claim 45). Thus, an entire scan area is traced out (see figure 1B) solely by changing the eccentricity during the scan process. In the example of figures 1A to 1C, the length of the minor axis is varied (cf. claim 3), but the length of the major axis remains fixed, so there is no variation of "radii". It should be noted that claims 1, 16 and 31 include embodiments in which both axes are varied, but all embodiments within the scope of these claims include varying the eccentricity of the elliptical pattern, a feature on which the prior art is entirely silent.

This approach is entirely different from that proposed by Seibel et al., who propose spiral scans based on either a circle or an ellipse. The present invention has a number of distinct advantages over such an approach. For example, the spiral scans of

Seibel et al. must, at some point, cause the fiber tip to become momentarily stationary, leading to a loss of kinetic energy; as is apparent from figure 1B of the present application, the present invention allows the tip of the fiber to remain moving at all times so that minimal energy is lost during use.

In addition, as is apparent from figure 1C of the present application, the present invention permits a scan to be produced from which a portion may be (electronically) excised that closely resembles a conventional rectilinear scan. With the spirals of Seibel et al., no such portion will be available, and it is likely that—when the resulting scan is displayed on a convention monitor—distortion or loss of information will occur.

It is submitted, therefore, that not only is the present invention as claimed in independent claims 1, 16 and 31 novel over the disclosure of Seibel et al., but also that the present invention as thus claimed is in no way suggested by or obvious in the light of the disclosure of Seibel et al.

In the *Claim Rejections - 35 USC § 102* section, previous independent claim 31 was rejected as been anticipated by Bridgelall et al. (US 5,821,521), but with the present amendment to claim 31, it is submitted that the claim is clearly novel over both Seibel et al. and Bridgelall et al.

In addition, in citing Bridgelall et al. the Examiner directs the applicant's attention to EEPROM sine tables 86 of figure 13A which is described in column 16 lines 6 to 12. This feature is said to anticipate the Y drive input signal "modulated by a modulating signal derived from said X drive input signal" of claim 31. However, the EEPROM sine tables 86 of Bridgelall et al. do not provide a Y drive input signal modulated by a modulating signal derived from the X drive input signal. The "X drive input signal" of

Bridgelall et al. is finally output by phase adjustment circuit 92. It is immediately fed into scanned element 96. It is not fed into any of the elements that generate the Y drive input signal. Thus, the Y drive input signal of Bridgelall et al. is clearly not "modulated by a modulating signal derived from said X drive input signal."

It is submitted, therefore, that independent claim 31 as amended is novel and non-obvious over the cited art.

In the *Claim Rejections – 35 USC § 103* section, dependent claims 2, 3, 6, 17 and 18 were all rejected under 35 USC § 103 as being unpatentable over Seibel et al. The Examiner contends that, since Seibel et al. disclose a variable elliptical scan pattern with varying radii, one of ordinary skill in this art would have found it obvious to vary either the major axis or the minor axis for the purpose of scanning over the entire surface of the area to be scanned.

The Examiner makes a valid point. As discussed above, the best interpretation of Seibel et al. is that the "radii" refer to the major axis and minor axis, so Seibel et al. are teaching that the major axis and minor axis be varied but in a manner that preserves the shape of the ellipse. Thus, as discussed above, Seibel et al. entirely fail to disclose that the eccentricity be varied: Seibel et al. teach the varying of the "radii" (i.e. both axes), whereas according to claims 2 and 17 of the present application only one axis is varied in length so that, as a result, the eccentricity of the ellipse is varied. This is nowhere suggested by Seibel et al., despite the advantages (discussed above) of this approach.

It is submitted, therefore, that dependent claims 2 and 17 are patentable over Seibel et al.

Similarly, dependent claims 3 and 18 define that only the minor axis be varied in length, which is contrary to the teaching of Seibel et al., who, when discussing ellipses, only ever refer to varying the plural "radii".

Dependent claim 6 depends from claim 1 and hence includes the feature of varying the eccentricity of the elliptical pattern. As discussed above, this is neither taught nor in any way suggested by Seibel et al.

In the Action, the Examiner also rejects dependent claims 12 and 27 under 35 U.S.C. §103(a) as unpatentable over Seibel et al. in view of Bridgelall et al. The Examiner contends that, since both inventions relate to scanning devices, it would have been obvious to use coils to control the magnet as disclosed by Bridgelall et al. in the scanning apparatus disclosed by Seibel et al.

Even if this were so, however, combining the teachings of Seibel et al. and Bridgelall et al. as suggested would not lead to the present invention. The drive mechanism of Bridgelall et al., as illustrated in figures 21A and 21B, comprises a permanent magnet 124 attached to support 118, and electric coils 116 attached to circuit board 114. The support 118 and circuit board 116 can move relative to each other because they are interconnected by four semi-rigid wires 126. Objective lens 112 is mounted on circuit board 114; scanning is achieved by driving the circuit board 116 and hence objective lens 112 with this electromagnetic interaction. The objective lens 112 thus scans the light output by light emitting diode 122.

The skilled person is thus taught a technique whereby light is scanned by suitable movement of an objective lens located in front of a light source, to divert light from the light source into a scanning pattern. The skilled person, wishing to apply the

teaching of Bridgelall et al. to the system of Seibel et al., would thus be encouraged to use a similar electromagnetic drive to move scan lens 39 (located in front of the light source, waveguide 36). There is no teaching in Bridgelall et al. or in Seibel et al. that would encourage the skilled person to attach a magnet to the light transmitter itself so that the light transmitter can be driven directly. This particular configuration is hence novel and non-obvious, and thus inventive over the cited combination of documents.

Finally, the Examiner rejects dependent claims 33, 40 and 43 under 35 U.S.C. §103(a) as unpatentable over Bridgelall et al. in view of Seibel et al. These claims all depend ultimately from claim 31 which the applicant submits is, as amended, novel and inventive over cited art taken along or in combination, for the reasons discussed above.

Therefore, for all of the foregoing reasons, it is submitted that the present application is in condition for allowance and such action is solicited.